



City of Danville Virginia

427 Patton Street, Room 304
Danville, VA 24541

PO Box 3300
Danville, VA 24543

J. Gary Via, CPPO
Division Director of Purchasing
e-mail: viajg@danvilleva.gov

Phone (434) 799-6528
Fax (434) 799-5102
e-mail: purchasing@danvilleva.gov

INVITATION FOR BID

Bid No.: IFB 14/15-070

Title: “Brantly Substation 69/12 KV Transformer Replacement”

Pre Bid Conference: A Pre Bid Conference will be held December 30, 2014 at 10:00 a. m. at the Utilities Training Room, 1040 Monument Street, Danville, VA 24541

Bid Closing Date: Sealed Bids shall be accepted no later than January 15, 2015 at 2:00 p. m. at the Purchasing Department, 427 Patton Street, Room 304, Danville, VA 24541

Direct Inquires to: J. Gary Via, Director of Purchasing
(434) 799-6528 option 4

TABLE OF CONTENTS

1.0 General Conditions

2.0 Scope of Work

3.0 Supplemental General Conditions

UC Synergetic Specifications No. 067780-000.SD0103.00 Rev B and plans dated 10/3/2014.

(NOTE: Any differences in bid document and the manual by UC Synergetics, UC Synergetics specifications and plans take precedence.)

PP1 Bid Proposal and Required Submittal Pages



City of Danville Virginia

427 Patton Street, Room 304
Danville, VA 24541

PO Box 3300
Danville, VA 24543

J. Gary Via, CPPO
Division Director of Purchasing
e-mail: viajg@danvilleva.gov

Phone (434) 799-6528
Fax (434) 799-5102
e-mail: purchasing@danvilleva.gov

IFB 14/15-070

"Brantly Substation 69/12 KV Transformer Replacement"

1.0 GENERAL CONDITIONS

1.1 Intent: Secure Virginia-licensed contractor to Provide all labor, supervision, administration, and equipment needed for installation, commissioning, and testing of three phase 18/24/30 MVA 69kv Delta-12.4/7.2kv GNDY transformer, as indicated on construction drawings at the Brantly substation, 1040 Monument Drive, Danville, VA. 24541

1.2 Sealed bids must be received in the Purchasing office no later than 2:00 p. m. January 15, 2015, mail to:

City of Danville
J. Gary Via
Purchasing Department
427 Patton Street, Room 304
Danville, VA 24541

1.3 Pre bid Conference: A pre-bid conference will be held on December 30, 2014 at 10:00 a. m. at the Utilities Training Room, 1040 Monument Avenue, Danville, Virginia.

1.4 Bonds: 5% bid bond, 100% performance and payment bonds

1.5 Time of Completion: Sixty (60) calendar day after notice to proceed.

1.6 Liquidated Damages: \$250.00 calendar days

1.7 Project Manager for the City: Craig Sibley; Utilities Department 434.799.5268

1.8 Code: All work performed shall conform to the Virginia Uniform Building Code.

1.9 Retainage: In making payments, there shall be retained five percent (5%) of the estimated amount until final completion and acceptance of the contract work.

2.0 SCOPE OF WORK

The Contractor shall provide all labor, material, equipment, supervision, & incidentals needed for installation, commissioning, and testing of three phase 18/24/30 MVA 69kv Delta-12.4/7.2kv GNDY transformer, as indicated on construction drawings as listed in attached UC Synergetic 69/12KV Transformer Replacement Project Construction Specification Rev. B, No. 06780-000SD0103.00 **(see section 9 for drawings included in construction package for this phase of the project. Subgrade work is being performed under a different contract.)** and plan sheets. Specifications and plans dated 10/3/2014.

To Include:

- Installation of three phase 18/24/30 MVA Transformer
- Installation of 69kv vacuum breaker (transformer high side)
- Installation of three phase 69kv gang operated side break line side breaker disconnect switch
- Installation of three phase 69kv gang operated side break load side breaker disconnect switch
- Installation of three phase 69kv gang operated vertical break buss tie switch
- Installation and termination of new power and control cables as required
- Installation and termination of 12.4/7.2kv aerial buss
- Installation and modification of 12.4/7.2kv buss supports

3.0 SUPPLEMENTAL GENERAL CONDITIONS

3.1 Compliance: The Contractor shall comply with the provisions of the following:

The City of Danville's "Standard Requirements & Instructions for Bidding", Version 1.4, dated May 22, 2008. Copies may be obtained from the Purchasing Office or by downloading from the City's website "Finance Department, Purchasing Division.

3.2 Award

- A. The award will be made to the lowest responsible and responsive bidder, with consideration given to completion time.
- B. The City reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.

3.3 Authority

- A. The Director of Purchasing as the designee of the City Manager has the sole responsibility and authority for negotiating, placing, and when necessary modifying each and every invitation to bid, purchase order or other award issued by the City of Danville. In the discharge of these responsibilities, the Director of Purchasing may be assisted by assigned buyers. No other City officer or employee is authorized to order supplies or services, enter into purchase negotiations, or in any way obligate the government of the City of Danville for

any indebtedness. Any purchases contrary to these provisions and authorities shall be void and the City shall not be bound thereby.

- B. This procurement process, including withdrawal of bids and appeal or protests, is governed by the "PROCUREMENT CODE OF THE CITY OF DANVILLE, VIRGINIA". Copies of the Procurement Code may be obtained by writing the City of Danville Purchasing Department, 427 Patton St. Room 304, Danville, Virginia 24541 and by downloading from the City's website, Finance Department, Purchasing Division. The City of Danville does not discriminate against faith-based organizations.

3.4 Bid Preparation

- A. Bid proposals must be written in ink or typewritten and shall be submitted on the forms issued. Unsigned or qualified bids will not be accepted. No bid may be considered if received after the time shown on Title Page. Contractors are expected to examine all instructions, specifications, drawings, sites, installations, etc. Failure to do so will be at the Contractor's risk. Erasures or other changes must be initialed by the person signing the bid.
- B. Envelopes containing bids should be sealed and marked in the lower left hand corner IFB 14/15-070 "Brantly Substation 69/12 KV Transformer Replacement" and submitted to the office indicated on title page.

C. SCC Number

Contractors organized as a stock or nonstock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Virginia Title 13.1 or Title 50 or as otherwise required by law. A Contractor organized or authorized to transact business in the Commonwealth pursuant to Virginia Title 13.1 or Title 50 shall include in its bid or proposal the identification number issued to it by the State Corporation Commission. Any bidder or offeror that is not required to be authorized to transact business in the Commonwealth as a foreign business entity under Title 13.1 or Title 50 or as otherwise required by law shall include in its bid or proposal a statement describing why the bidder or offeror is not required to be so authorized.

3.5 Bidder Eligibility

- A. Bidders are required to submit evidence that they have practical knowledge of the particular work bid upon and that they have the financial resources to complete the proposed work. Failure on the part of any Bidder to carry out previous contracts satisfactorily, or lack of experience or equipment necessary for the satisfactory and timely completion of this Project, may be deemed sufficient cause for disqualification of said Bidder.
- B. The Bidder must readily and independently document that the Bidder possesses the experience, equipment and financial resources necessary for a timely and professional completion of this project.

C. Irregular Bid Proposals: Bid proposals shall be considered irregular for the following reasons:

1. If the bid is on a form other than that furnished by the City, if the City's form is altered, or if any part of the proposal form is detached.
2. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind which make the proposal incomplete, indefinite, or otherwise ambiguous.
3. If the bid does not contain a unit price for each pay item listed in the proposal.
4. If the bid contains unit prices that are obviously unbalanced.
5. If the bid is not accompanied by the proposal guaranty specified by the City.

D. Withdrawal of Bid Due to Error:

1. A bidder for a City construction contract, other than a contract for construction or maintenance of public highways, may withdraw his bid from consideration, if the price bid was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith and the mistake was a clerical mistake, as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor, or material made directly in the compilation of the bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents, and materials used in the preparation of the bid sought to be withdrawn.
2. The bidder shall give notice in writing of his claim of the right to withdraw his bid within two (2) business days after the conclusion of the bid opening procedure.

E. Disqualification of Bidder: A bidder shall be considered disqualified for any of the following reasons:

1. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.
2. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the City until any such participating bidder has been reinstated by the City as a qualified bidder.
3. If the bidder is considered to be in "default" for any reason specified in §5.4.

3.6 Bids Binding 60 Days

Unless otherwise specified, all formal bids submitted shall be binding for sixty (60) calendar days following bid-opening date.

3.7 Cleanup

- A. The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the work, he shall remove all his waste materials and rubbish from and about the project as well as all his tools, construction equipment, machinery, and surplus materials.
- B. If the Contractor fails to clean up at the completion of the work, the City may do so and the cost thereof shall be charged to the Contractor.

3.8 Control of Work

- A. On all questions relating to quantities, the acceptability of materials and equipment, or work, and the interpretation of the Contract Documents, the decision of the Project Manager is final and binding, and shall be precedent to any payment under the contract.
- B. All work and material are subject to the inspection and approval of the Project Manager. Any work done without proper inspection will be subject to rejection. Inspection of the work shall not relieve the Contractor of the obligation to fulfill all conditions of the contract. The Project Manager may require the Contractor to remove from the work any employee, as the Project Manager may deem incompetent, careless or insubordinate.
- C. Certain items of work may be performed by forces of the City. The Contractor shall cooperate fully in scheduling and coordinating with the Project Manager such that no delay will result in the performance of such work. If the Contractor claims that such work delays or causes additional costs, he shall make claims as provided in Work Changes.
- D. The City may award, or may have awarded contracts to others for other work. The Contractor shall cooperate fully with such other Contractors by scheduling his own work with that to be performed under other Contracts as may be directed by the City. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor as scheduled.
- E. Neither the final certificate of payment nor any provision in the contract documents, nor partial or entire occupancy of the premises by the City, shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of work unless a longer period is specified. The City will give notice of observed defects with reasonable promptness.

3.9 Equal Employment

During the performance of this contract, the Contractor agrees as follows:

- A. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin, except where religion, sex, or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions for this non-discrimination clause.
- B. The Contractor also shall not discriminate against any handicapped person in violation of any state or federal law or regulation and shall also post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this additional non-discrimination clause.
- C. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such contractor is an equal opportunity employer.
- D. Notices, advertisements, and solicitations placed in accordance with Federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- E. The Contractor will include the provisions of the foregoing paragraphs in every subcontract or purchase order over \$10,000 so that the provisions will be binding upon each subcontractor or vendor.
- F. The Contractor will otherwise comply with all other applicable provisions of local, State, and Federal law.

3.10 Drug Free Work Place

During the performance of this contract, the contractor agrees to:

- A. Provide a drug-free workplace for the contractor's employees
- B. Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- C. State in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace
- D. Include the provisions of the foregoing clauses in every subcontract or purchase order of or over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

“Drug-free workplace” means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

3.11 Guaranty

- A. The Contractor shall guarantee that all the materials used and all the work done under the contract shall fully comply with the requirements of the plans and specifications and the instructions of the City.
- B. All expenses covering return or replacement of defective or improper equipment or merchandise will be assumed by the Contractor. In no instance shall the contractor refer the City to any distributor or manufacturer for settlement of any claim arising from defective or improper equipment or merchandise. If the Contractor shall fail to replace or repair any defective or improper equipment or merchandise within thirty (30) days from date of notice, the City may make the necessary corrective arrangements and charge the cost to money due the Contractor or bill the Contractor. The Contractor agrees to reimburse the City in such instances. Samples of any warranties which will apply to the goods being offered for sale shall be included as part of the bid.
- C. Any defects in the completed work or failure of the construction to fully perform or endure the service for which it is intended, which in the opinion of the City are caused by or due to the use of materials, skill or workmanship not in compliance with the said plans, specifications and instructions, that may appear in the work within a period of twenty-four (24) months after acceptance by the City shall be regarded as prima facie and conclusive evidence that the Contractor has failed to comply with the said specifications, plans, and instructions. The Contractor in this event shall at his own expense, at such time and in such manner as the Engineer may direct, repair or take up and reconstruct any such defective work, in full compliance with the original specifications, plans, and instructions. The repairs required to be made by the Contractor shall extend only to making good an inherent defects which become manifested in the materials and workmanship under ordinary conditions, and shall not be held to cover any breakage or damage caused by improper use or by accident resulting from circumstances over which the Contractor has no control.

3.12 Indemnification

- A. The Contractor shall indemnify, keep and save harmless the City, its agents, officials and employees, against all injuries, deaths, loss, damages, claims, patent claims, suits, liabilities, judgments, costs and expenses, which may in anywise accrue against the City, its agents, officials and employees in consequence of the granting of this contract or which may in anyway result therefrom, whether or not it shall be alleged or determine that the act was caused through negligence or omission of the Contractor or his employees, or of the subcontractor or his employees, if any, and the Contractor shall, at his own expense, appear, defend and pay all charges of attorneys and other expenses arising therefrom or incurred in connection therewith, and, if any judgment shall

be rendered against the City in any such action, the Contractor shall, at his own expense, satisfy and discharge the same. The Contractor expressly understands and agrees that any performance bond or insurance protection required by this contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the City, its agents, officials, and employees as herein provided. The Contractor shall have charge and control of the entire work until its completion and acceptance by the City.

- B. The Contractor shall assume all risks and responsibilities for casualties of every description in connection with the work, except that he shall not be held liable or responsible for delays or damage to the work caused by acts of God, acts of Public enemy, acts of Government, quarantine restrictions, general strikes through the trade, or by freight embargoes not caused or participated in by the Contractor. The Contractor shall have charge and control of the entire work until completion and acceptance of the same by the City.
- C. The Contractor shall alone be liable and responsible for, and shall pay, any and all loss or damage sustained by any person or party either during the performance or subsequent to the completion of the work under this agreement by reason of injuries to persons and damage to property, buildings, and adjacent work, that may occur either during the performance of the work covered by this contract or that may be sustained as a result of or in consequence thereof, irrespective of whether or not such injury or damage be due to negligence or the inherent nature of the work.
- D. The Contractor shall bear all losses resulting from the amount or character of the work being different, or because the nature of the premises on which the work is done is different from what was expected, or on account of the weather, or similar other causes.

3.13 Insurance

The Contractor shall not commence work under this contract until he has obtained all the insurance required hereunder and such insurance has been approved by the City; nor shall the Contractor allow any Subcontractor to commence work on his subcontract until all similar insurance has been so obtained and approved. Approval of the insurance by the City shall not relieve or decrease the liability of the Contractor hereunder.

- A. Worker's Compensation including Occupational Disease and Employer's Liability Insurance: The Contractor shall take out and maintain during the life of this Contract Workers' Compensation and Employer's Liability Insurance for all of his employees to be engaged in work on the project under this contract in an amount no less than the minimum allowed by the State Corporation Commission, and in case of such work is sublet, the Contractor shall require the Subcontractor similarly to provide Workers' Compensation and Employer's Liability Insurance for all of the latter's employees to be engaged in such work.
- B. Comprehensive General Liability Insurance: The Contractor shall maintain during the life of this Contract comprehensive general liability insurance as shall

protect him, the City of Danville and its offices, agents and employees, and any Subcontractors performing work covered by this Contract from claims for damage for personal injury, including death, as well as from claims for property damage, which may arise from operations under this Contract, whether such operations by himself or by any Subcontractor, or by anyone directly or indirectly employed by either of them. The amount of such insurance shall not be less than a combination single limit of \$1,000,000 per occurrence on bodily injury and property damage and \$1,000,000 aggregate on completed operations. The comprehensive general liability insurance shall provide the following coverage:

Comprehensive
Premises – Operation
Products/Completed Operations Hazard
Contractual Insurance
Underground Hazard
Explosion & Collapse Hazard
Independent Contractor and Subcontractor
Broad Form Property Damage
Personal Injury
Builders Risk

- C. Automobile liability insurance minimum combined single limits of \$1,000,000 for any one person and subject to the same limit for each person, \$1,000,000 on account of any one accident. This insurance shall include bodily injury and property damage for the following vehicles:

Owned Vehicles
Non-owned Vehicles
Hired Vehicles

- D. Umbrella Policy. At the option of the Contractor, primary limits may be less than required, with an umbrella policy providing the additional limits needed. This form of insurance will be acceptable provided that the primary and umbrella policies both provide the insurance coverage's herein required. However, any such umbrella policy must have minimum coverage limits of \$3,000,000.00.
- E. All policies shall name the City of Danville, its officers, agents, and employees, as additional insured. This coverage shall be reflected on the Certificates of Insurance (including any endorsements or riders thereto), which will be provided to the City. Each Certificate of Insurance shall require that notice be given thirty (30) days prior to cancellation or material change in the policies to the Director of Purchasing.
- F. Written evidence of the insurance required herein shall be filed with the City not later than thirty (30) days following the date of the award of the Contract. A copy of the evidence of insurance shall be filed with the Director of Purchasing.

3.14 Interpretation

- A. If any person contemplating the submission of a bid on this invitation is in doubt as to the true meaning of any part of the Invitation for bid or other documents, he

should submit a written request for an interpretation thereof to the Engineer and received at least four (4) days before bid deadline. An interpretation of the bid invitation document will be made only by written addendum issued to each potential bidder. THE CITY WILL NOT BE RESPONSIBLE FOR EXPLANATIONS OR INTERPRETATIONS OF BID INVITATION DOCUMENTS EXCEPT AS ISSUED IN ACCORDANCE HEREWITH. The Bidder shall acknowledge receipt of all addenda in the Proposal.

- B. All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.
- C. If during performance of the Work, the Contractor finds a conflict, error or discrepancy in the Contract Documents, the contractor shall so report to the Engineer in writing at once before proceeding with the work affected thereby and shall obtain a written interpretation or clarification from the Engineer. In resolving such conflicts, errors and discrepancies, the Documents shall be given precedence in the following order: Agreement, Modifications, Addenda, Supplementary Conditions, Instruction to Bidders, General Conditions, Proposal and Specifications/Drawings. Figure dimensions on Drawings shall govern over scale dimensions and detailed drawings shall govern over general drawings.

3.15 Limitations of Work Area

- A. The Contractor shall be limited to a specific area for storage of equipment, supplies, and building materials. This area shall be designated by the City and established during the Pre-construction conference.
- B. Parking area for employees of the Contractor shall be designated in the vicinity of the project, and it shall be the responsibility of the Contractor to require his personnel to park in this designated area and not any area which may interfere with the normal operations in and around the construction area or with access and use of the facility by the City.

3.16 Novation

The Contractor shall not assign or transfer, whether by an Assignment or Novation, any of its rights, duties, benefits, obligations, liabilities or responsibilities under this Contract without the written consent of the City; provided, however, that assignments to banks, trust companies or other financial institutions for the purpose of securing bond may be made without the consent of the City. Assignment or Novation of this Contract shall not be valid unless the Assignment or Novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered and materials, tools and equipment supplied for the performance of the work under this Contract in favor of all persons, firms or corporations rendering such labor or services or supplying such materials, tools and equipment.

3.17 Observance of Laws

The Contractor at all times shall observe and comply with all Federal, State and City laws, bylaws, ordinances and regulations in any manner affecting the conduct of the work or applying to employees on the project, as well as all orders or decrees which have been promulgated or enacted, by any legal bodies or tribunals having authority or jurisdiction over the work materials, employees or contract. The contractor does not, and shall not during the performance of the contract for goods and services in the Commonwealth; knowingly employ an unauthorized alien as defined in the federal Immigration Reform and Control Act of 1986.

3.18 Patents

The Contractor agrees to indemnify and save harmless the City, and all personnel from all suits and actions of every nature and description brought against them or any of the, for or on account of the use of patented appliances, products, or processes, and he shall pay all royalties and charges which are legal and equitable. Evidence of such payment or satisfaction shall be submitted upon request of the City as a necessary requirement in connection with the final execution of any contract in which such patented appliances, products, or processes are used.

3.19 Performance

In case of default by the Contractor, the City may procure the commodity or services from other sources and hold the Contractor responsible for any excess costs occasioned thereby.

3.20 Permits

The Contractor shall, at his own expense, secure any business or professional licenses, permits or fees required by the City of Danville, Commonwealth of Virginia or any other requesting agency having jurisdiction.

3.21 Safety

- A. All practices, materials and equipment shall comply with the Federal Occupational Safety and health Act, as well as any pertinent Federal, State and/or local Safety or Environmental Codes.
- B. Construction site safety is the responsibility of the Contractor.

3.22 Specifications and Product Description

When brand names, model numbers, trade names, catalog number or cuts are listed, they are, unless otherwise specified, included for the purpose of furnishing bidders with information concerning the style, type or kind of article desired and a bidder may offer an article which he certifies to be equal in quality, performance and other essential characteristics. Any available printed material or literature which describes the product being offered for sale shall be included with the bid. The City shall be the sole judge of suitability of substitutes offered.

When a formal numbered specification is referred to in this invitation, no deviation will be permitted and the bidder will be required to furnish articles in conformity with that specification.

3.23 Subcontracts

- A. No proposed subcontractor shall be disapproved by the City except for cause.
- B. The Contractor shall be as fully responsible to the City for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them as he is for the acts and omissions of persons directly employed by him.
- C. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the applicable provisions of the Contract for the improvements embraced in this Contract.
- D. Nothing contained in the Contract shall create any contractual relation between any subcontractor and the City.
- E. Payments to subcontractors
 - 1. The contractor shall take one of the two following actions within seven days after receipt of amounts paid to the contractor by the City of Danville for work performed by the subcontractor
 - a. Pay the subcontractor for the proportionate share of the total payment received from the agency attributable to the work performed by the subcontractor under that contract; or
 - b. Notify the agency and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.
 - 2. Individual Contractors shall provide their social security numbers and proprietorships, partnerships, and corporations to provide their federal employer identification numbers.
 - 3. The contractor shall pay interest to the subcontractor on all amounts owed by the contractor that remain unpaid after seven days following receipt by the contractor of payment from the City of Danville for work performed by the subcontractor, except for amounts withheld as allowed in subdivision 1.
 - 4. Unless otherwise provided under the terms of this contract, interest shall accrue at the rate of one percent per month.”
The contractor shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.

A contractor's obligation to pay an interest charge to a subcontractor pursuant to the payment clause in this section shall not be construed to be an obligation of the City of Danville. A contract modification shall not be made for the purpose of

providing reimbursement for the interest charge. A cost reimbursement claim shall not include any amount for reimbursement for the interest charge.

3.24 Suspension of Work

The work may be suspended by the City when deemed in the best interest of the City.

3.25 Termination

If the Contractor fails to begin the work under this contract within the time specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to insure the completion of said work within the specified time, or shall perform the work in an unsatisfactory manner, or shall neglect or refuse to remove materials or perform anew such work as shall discontinue the prosecution of the work, or if the Contractor shall become insolvent or be declared bankrupt, or shall commit any act of bankruptcy or insolvency, or shall make an assignment for the benefit of creditors, or from any other cause whatsoever shall not carry out the work in an acceptable manner, the City shall give notice in writing to the Contractor and his surety of such failure, delay, neglect, refusal, or default, specifying the same and if the contractor, within a period of seven days after such notice, shall not proceed in accordance therewith, then the City Manager acting for and on behalf of the City shall, upon receipt of a written certificate from the Engineer of the fact of such failure, delay, neglect, refusal, or default and of failure of the Contractor to comply with such notice, have full power and authority to declare the forfeiture of this contract, and to forfeit the rights of the Contractor in this contract, and the City Manager at this option may call upon the surety to complete the work in accordance with the terms of this contract or may have the City take over the terms of this contract or may have the City take over the work, including any or all materials and equipment on the ground as may be suitable and acceptable to the City and may complete the work by or on its own employees, or may enter into a new contract for the completion of the work, or may use such other methods as in the opinion of the City Manager shall be required for the completion of the work in an acceptable manner. All costs and charges incurred by the City, together with the cost of completing the work, shall be deducted from any monies due or which may become due on this contract.

In case the expense so incurred by the City shall be less than the sum which would have been payable under this contract if it had been completed by the Contractor and had not been forfeited by the City, then the Contractor shall be entitled to receive the difference, subject to any claims of liens thereon which may have been filed with the City or any prior assignment filed with it. In case such expense shall exceed the sum which would have been payable under this contract, the Contractor and the surety shall be liable and shall pay the City the amount of such excess.

3.26 Work Changes

- A. The City without invalidating the contract, and without notice to any surety, may order changes in the work within the general scope of the contract consisting of additions, deletions or other revisions, providing the total amount added or

eliminated does not exceed twenty-five percent (25%) of the total contract price, or \$50,000, whichever is greater. All such changes in the work shall be authorized by change order, and shall be executed under the applicable conditions of the contract documents.

- B. The cost or credit to the City resulting from a change in the work shall be determined by unit prices subsequently agreed upon or by mutual acceptance of a lump sum properly itemized, or on the basis of cost of Work plus a Contractors Fee for overhead and profit as determined below.
- C. Should concealed conditions encountered in the performance of the work below the surface of the ground or hidden in existing structures be at variance with the conditions indicated by the contract documents, the contract price may be equitably adjusted by change order upon claim by either party and approval of the other party, made within either party and approval of the other party, made within twenty (20) days after the first observance of the conditions.
- D. The Contractor shall promptly, and before such conditions are disturbed, notify the Project Manager in writing of: (a) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (b) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract. The Project Manager shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the contractor's cost of, or the time required for, performance of this contract, and equitable adjustment shall be made and the contract modified in writing accordingly. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given notice as above required; or unless the Project Manager grants a further period of time before the date of final payment under the contract.

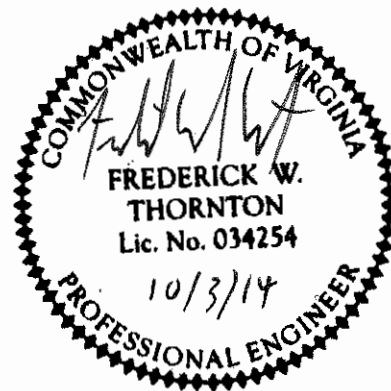
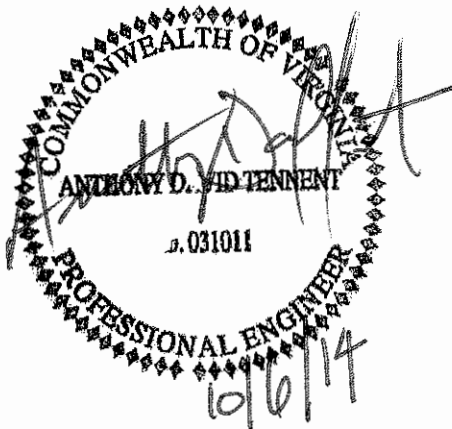


BRANTLY SUBSTATION 69/12 KV Transformer Replacement Project

Danville, Virginia

CONSTRUCTION SPECIFICATION Rev B

No. 06780-000.SD0103.00



Prepared for: City of Danville

This contains highly confidential and proprietary information. This information shall not be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of UC Synergetic, LLC. This information shall not be disclosed, in whole or in part, to any third party without prior written permission of UC Synergetic, LLC.

UC / SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 2 of 21

VERIFICATION OF SPECIFICATION

Project Owner City of Danville, Virginia
Specification Title Construction Specification
Specification No. 06780-000. SD103. 00
Revision No. B **Revision Date:** October 3, 2014

In accordance with established procedures, the quality of this specification has been assured. Signatures below certify that the above specification was originated, reviewed, and approved as noted.

Prepared By: Joshua Wright **Date:** _____

Checked By: William Shannon **Date:** _____

Reviewed by Responsible Discipline:

Mechanical Engineering: N/A **Date:** N/A

Electrical Engineering: Fred Thornton Fred Thornton **Date:** 10/3/14

Civil/Structural Engineering: Dave Tennent Dave Tennent **Date:** 10/6/14

Approved By: Glen Allen Glen Allen **Date:** 10/6/14

Revision Log:

A. <u>Issued for Below Grade Bid</u>	E. _____
B. <u>Issued for Construction</u>	F. _____
C. _____	G. _____
D. _____	H. _____


	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 3 of 21

Table of Contents

	Page:
1. Scope	4
1.3. Demolition	4
1.4. New Construction	4
2. General Requirements	5
3. Receipt, Handling, and Storage of Materials	6
4. Codes and Standards	7
5. Submittals Prior to Construction	7
6. Excavations	8
7. Backfill	10
8. Cast-In-Place Concrete	10
8.1. General	10
8.2. Materials	10
8.3. Limiting Requirements	11
8.4. Storage of Materials	12
8.5. Batching and Mixing	12
8.6. Placement	13
8.7. Concrete Tests	16
8.8. Reinforcement	16
8.9. Forms	17
8.10. Embedments	18
8.11. Finishing Formed Surfaces	18
8.12. Finishing Unformed Surfaces	18
8.13. Curing	19
8.14. Repairing Defective Concrete	19
8.15. Construction Joints	20
8.16. Expansion Joints	20
8.17. Openings in Concrete	20
8.18. Tolerances	20
9. Drawings Included in Construction Package	21

UC SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 4 of 21

1. Scope

1.1. The scope of work shall be to provide all labor, supervision, administration and management; and to supply all construction equipment, materials, and services necessary to install all below grade PVC conduits, concrete foundations, transformer oil containment and grounding at the Brantly Substation in Danville, Virginia. This scope of work will be performed in accordance with the Specification, drawings, and other contract documents referenced herein.

1.2. The Brantly Substation is located at 1040 Monument St., Danville, VA 24541.

1.3. Demolition

1.3.1. Demolition of nine reinforced concrete foundations as shown on the drawings, FP01.00-DEMO and FD02.00-DEMO:

- (2) 5' x 6' Spread Footers – 12kV Bus Supports
- (3) 3' x 10' x 6.5' Pads, 12kV Regulators
- (2) 5' x 10' x 6.5' Pads, 12kV Regulators
- (1) 5' x 12' Pad – 69kV Circuit Breaker
- (1) 12' x 12' Pad – 12kV/69kV Transformer

1.3.2. Demolition of an existing 12kV underground cable pull box:

- The existing 12kV underground cable pull box will need to be demolished to an elevation as to not interfere with the newly installed oil containment liner for the 12kV/69kV Transformer. The remainder of the pull box can be filled with concrete or backfilled as outlined in this specification.

1.3.3. All loose material as a result of the demolition shall be removed from site.

1.3.4. Backfill should be placed in the location of the demolished foundations as outlined in specification.

1.4. New Construction

1.4.1. Layout and installation of nine reinforced concrete foundations as shown on the foundation drawings FP01 – REV. B., FD01 – REV. B, FD03 – REV. B, and FD05 – REV. A.

- (2) 3' x 6'-8" Spread Footers – Transformer Cab. Access Platform
- (4) 5' x 6' Spread Footers – 12kV Bus Supports
- (1) 2'-6" x 5' x 2'-3" Pad – Transformer Cab. Access Stairs
- (1) 8' x 8' x 1'-6" Pad – 69kV Circuit Breaker
- (1) 8'-6" x 15'-6" x 3'-6" Pad – 12kV/69kV Transformer

1.4.2. Layout and installation of Strongwell Oil Containment system installed per detail drawing #OC01 and manufacture's recommendations.

- (1) 32' x 25'-6" minimum Strongwell Oil Containment System

1.4.3. Provide trenching and backfill and install new grounding conductors and conduits. PVC Schedule 40 conduits, 10 foot lengths with one belled end, sizes 2" and 4" diameters and all miscellaneous fittings and adhesives necessary to complete this installation. All below grade #4/0 and #2/0 copper ground wire will be furnished by the contractor. Compression connections are to be furnished by the below grade contractor. All grounding pig tails from ground grid to structures or equipment are to be

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 5 of 21

stranded, soft drawn copper, and sized as indicated on the grounding plan drawing GP01.00–REV.0. All grounding pig tails are to be 10ft in length above grade and left coiled on grade. The grounding pig tail for the transformer X0 bushing is to be 25ft in length above grade and left coiled on grade. The below grade Contractor will be responsible for all necessary excavation/trenching. Conduits are to be 24" minimum below rough grade and the grounding conductors are to be 18" below rough grade.

1.4.4. All fencing material and labor will be furnished by owner.


1.4.5. Once the below grade grounding, conduit, and foundation work is completed the Contractor shall furnish and install the yard surfacing within new construction area of the substation yard per the direction of the City of Danville on-site supervisor as follows:

- AASHTO Size No. 57 washed Limestone, nominal size 1 inch to No. 4, 6 inches thick, unless noted otherwise.

NOTE: The above explanation is intended to give a general definition or description of the scope of the work included under these Specifications and documents and shall not be construed to be an itemized listing of each element of the work required. The Contractor shall be responsible for construction and conforming in all respects to the details and requirements of the specifications, IFC drawings, and other contract documents.

2. General Requirements


- 2.1. Contractor shall arrange for a pre-construction safety orientation meeting with the Owner and all individuals which will be asked to perform services under the terms of this contract. This meeting is intended to familiarize the Contractor with all applicable work rules and safety expectations. The Contractor shall make arrangements for this meeting with the Owner's identified representative. All individuals the Contractor will have on site performing the Work shall be made available for this orientation
- 2.2. The Contractor shall furnish all equipment, material, labor, and supervision necessary to complete all Work as defined on the Drawings and specified herein.
- 2.3. The Contractor shall furnish at his own cost, all temporary or expendable materials required for the performance of the Work.
- 2.4. The Contractor shall carefully preserve all existing monuments, bench marks, reference prints and stakes. In the event any or all of the foregoing items are destroyed the Contractor shall be solely liable therefore and he shall notify the Owner immediately, have made all necessary repairs and bear the expense thereof and all damage caused thereby.
- 2.5. Logs of soil borings performed during subsurface investigation may be available at the offices of the Owner for the general information of the Contractor. However, boring logs do not constitute a part of the Contract Documents.
- 2.6. The Contractor is expected to examine the site, interpret the soil boring logs as he sees fit, and arrive at his own conclusions regarding the character and locations of materials to be encountered. The Contractor may make additional borings and investigations if he so desires at no additional cost to the Owner.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 6 of 21

- 2.7. The Contractor shall furnish all temporary utility facilities and sanitary facilities at the site for construction purposes and shall comply with all local, state and federal codes, regulations and laws.
- 2.8. It shall be the sole responsibility of the Contractor in the performance of the work to locate and avoid all utilities, other structures and obstructions whether located below or above ground. For that purpose he shall employ all necessary precautions and methods to prevent contact with and damage to utilities, other structures and obstructions. In the event such damage does occur, the Contractor shall be solely liable therefore and he shall notify the Owner immediately, make or have made all necessary repairs and bear the expense thereof and all damage caused thereby.
- 2.9. If the contractor finds he cannot safely excavate at a location designated on the Drawings either because of utilities, other structures or obstructions that may be damaged, he shall so notify the Owner immediately.
- 2.10. The Contractor shall carefully locate and stake all foundations as shown on the Drawings.
- 2.11. Prior to the placing of concrete, all foundations, anchor bolt layouts and reinforcing steel shall be subject to checking by the Owner. However, the Contractor shall be held solely liable for the correct location of foundations based on the Drawings.
- 2.12. The Contractor shall maintain all previously constructed embankments and shall replace any portions which have become displaced or damaged due to the Contractor's operations.
- 2.13. After installation of foundations all anchor bolt setting templates shall be removed by the Contractor and disposed of by him in an Owner approved manner and location. When removing anchor bolt setting templates from foundations, Contractor shall reinstall all nuts and washers to each anchor bolt. All costs (material, labor, transportation, etc.) associated with replacing missing anchor bolt nuts and washers shall be borne by the Contractor.
- 2.14. After installation of foundations and removal of forms, Contractor shall protect foundations from dirt, mud, and all other debris by covering foundations with plastic (4mil minimum) until station is ready for final surfacing. All costs associated with cleaning of foundations not properly covered or protected, shall be borne by the Contractor.
- 2.15. Prior to final payment, the Contractor shall provide the Owner with an accurate drawing record of as-built conditions to record any variation in Drawings forming a part of this Specification.

3. Receipt, Handling, and Storage of Materials

- 3.1. Responsibility for Owner-furnished materials shall be vested in the Contractor when such materials have been turned over to and received by the Contractor.
- 3.2. Owner-furnished materials will be stored at a location specified by the Owner. From this location, all Work of checking, handling, loading, hauling, unloading, and caring for the materials shall be performed by the Contractor. These costs are to be included in the prices for the various units of Work.
- 3.3. The Contractor shall maintain accurate records and shall take such security measures as are necessary to protect Owner-furnished materials against loss, destruction, or theft.
- 3.4. If a shortage and/or damage of material is found, the Contractor shall notify the Owner within twenty-four hours.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 7 of 21


- 3.5. The Contractor shall assume full responsibility for the accuracy of quantities received, the care and protection of the accepted material, and the cost of replacing any shortage and/or damaged materials which are found but not reported.
- 3.6. After the Contractor has accepted materials as being in proper condition, he shall be responsible for their protection, from loss and damage of any nature, until they are permanently erected and the Work accepted by the Owner.

4. Codes and Standards

- 4.1. Work shall be in accordance with the latest revisions of the applicable codes and standards of the following organizations:
 - 4.1.1. American Society of Testing and Materials (ASTM).
 - 4.1.2. American Concrete Institute (ACI).

5. Submittals Prior to Construction

- 5.1. The source and quality of concrete materials and the concrete proportions proposed for the work shall be submitted to the Owner for review before the concrete work is started. Review of these reports will be for general acceptability only and continued compliance with all contract provisions will be required.
- 5.2. The Contractor shall notify the Owner at least twenty-four hours in advance of the times and places at which he intends to place concrete.
- 5.3. Prior to placing of concrete, duplicate copies of test reports, or certificates of compliance with standards specified, will be submitted to the Owner for the following:
 - 5.3.1. Cement: from each car from which cement will be used.
 - 5.3.2. Aggregates: for each size aggregate from each source of aggregate, for grading, deleterious substances and soundness.
 - 5.3.3. Admixtures and curing materials.
 - 5.3.4. Mix design: Concrete mix shall be designed for intended use. Design quantities shall be submitted to the Engineer for review prior to commencing concrete placement. Acceptable mixes shall be subject to field adjustment to meet these Specifications.
 - 5.3.5. The report for each concrete mix design shall include the following:
 - Slump on which design mix was based.
 - Gallons of water per cubic yard.
 - Cement factor.
 - Weight (surface dry) of each aggregate per cubic yard.
 - Ratio of fine to total aggregate.
 - Quantity of each admixture.
 - Air content.
 - Time of initial set.
- 5.4. Compressive strength based on seven-day and twenty-eight day compression tests at Contractor's expense.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 8 of 21

These proving tests shall consist of at least four cylinders, and these cylinders must show a strength of fifteen percent higher than the strength called for at the end of twenty-eight days.

- 5.5. In the event the Contractor wishes to commence construction without submitting twenty-eight day cylinder tests, he may at his discretion, use a mix offered by a reputable "Ready Mix" firm, or a mix designed by a reputable testing laboratory, if certified copies of recent tests performed on proposed mix are submitted and accepted.

6. Excavations

- 6.1. The Contractor shall excavate earth, rock, tree stumps, roots, pavement, foundations and other materials encountered, as shown on the Drawings or as specified by the Owner. Suitable excavated material shall be placed as backfill around foundations when approved by Owner. The Contractor shall restore the area around foundations to the line and grade called for on the grading plan upon completion of foundation installation; such work shall be incidental to the various related items of work. Excess excavation and materials found to be unsuitable for grading shall be wasted and disposed of as requested by the Owner. All excess material shall be disposed of off the site unless otherwise specified by the Owner.
- 6.2. Foundations in soil shall be excavated to clean, level surfaces of undisturbed material of adequate bearing value. For circular concrete foundations, the volume of over-excavation on the sides or bottoms shall be filled with concrete. The cost of additional concrete used in the foundation shall be borne by the Contractor.
- 6.3. The quality of the soil and the adequacy of its bearing shall be approved by the Owner before concrete or backfill is placed in the excavation. If unsuitable material is encountered at the plan depth of the foundation, the Owner may direct that the soil be removed and replaced with concrete or soil and compacted to the required bearing.
- 6.4. Excavations shall be maintained in a safe, clean and sound condition up to the time of placement of concrete. Whenever necessary, the Contractor shall re-excavate materials which have accumulated in previously prepared holes. Any muck or other unsatisfactory bearing material resulting from frost action or entrance of water into excavations previously prepared to the required depth shall be removed and replaced with well compacted backfill at the Contractor's expense. The Contractor shall effectively cover all holes when not attended, to prevent hazardous conditions and ensure the safety of other people. The Contractor shall be responsible for all damage to persons and/or property as a result of ineffective covering.
- 6.5. The Contractor shall do all bracing, sheeting and shoring necessary to perform and protect all excavations as required for safety, and to conform to laws and regulations of governmental bodies having jurisdiction.
- 6.6. Machine Excavation (Backhoe or similar equipment):
- 6.6.1. All excavation will be classified as "Earth Excavation" or "Rock Excavation". Rock excavation is defined as boulders exceeding one-half cubic yard in volume or any material which cannot be excavated with a front-end loader with a minimum bucket breakout force of 25,600 pounds (Caterpillar 977 or equivalent) or a backhoe having a bucket curling force rated at not less than 18,300 pounds (Caterpillar 225 or equivalent). All other excavation, including soft shale, hardpan, gravel or other material which can be removed by hand or machine is defined as "Earth Excavation".

UC / SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 9 of 21

6.7. Augured Excavation:

6.7.1. All excavation will be classified as "Earth Excavation" or "Rock Excavation". Earth excavation is defined as any material that can be removed using a standard earth type auger. Refusal of an earth auger shall be defined as a penetration rate equal to or less than six inches per 15 minute period. Rock excavation is defined as any material that requires the use of rock teeth, dynamiting, impact equipment, or other industry recognized rock removal equipment.

6.8. Where the Contractor excavates deeper than the elevations specified for spread footings, slabs, and duct bank foundation bearing surfaces, he shall backfill up to the specified elevation with compacted fine aggregate, Type Virginia 21B or concrete. Fine aggregate shall be in accordance with the Virginia Standard Specifications for Highway Construction; compacted in six inch lifts to a density equal to or better than what existed at the bearing surface had over-excavation not taken place. Replacement and compaction shall be done by the Contractor at no expense to the Owner.

6.9. Excavations for building foundations, slabs, spread footings, and duct banks shall be kept free of water during construction. Surface water shall be prevented from flowing into excavations. Any water accumulated shall be promptly removed.

6.10. The Contractor shall locate, protect, shore, brace, support and maintain all existing underground pipes, cables, conduits, drains and other underground construction which may be uncovered or otherwise affected by the Work.

6.11. Casing:

6.11.1. In the event sloughing and caving occur due to underlying soil conditions, the Contractor shall take the necessary steps to encase that portion of augured holes necessary to install the foundation to the depth shown on the Drawings.


6.11.2. There shall be no voids between the outside of any encasement and the surrounding earth. To insure this, the encasement must be pulled as the concrete pour is being made so that the fresh concrete is placed against the undisturbed earth. The encasement shall be of sufficient strength to withstand any driving force required to place it and any extracting force necessary to remove it.

6.11.3. Methods other than casing (drilling mud, well points, differential heads or other methods) must be approved by the Owner prior to their use. Cost of these other methods shall be included as a cost for casing installation and removal.

6.11.4. The unit cost of casing installation (including removal) shall be per foot of casing based on the foundation diameter in feet. The cost of casing installation shall be added to the cost of the foundation without casing. The units for casing shall be as shown on the assembly units sheet.

6.11.5. In the event the Engineer determines that the Contractor can not pull casing due to inadequate equipment or methods, the cost of casing left in place shall be borne by the Contractor.

6.12. Augured holes shall not be out of plumb by more than one and one-half inches in ten feet. The depth of holes shall be accurately controlled to the elevations shown on the Drawings. During the pouring operation, the Contractor shall continuously monitor the hole to be aware if any caving occurs. All concreting operations shall stop if caving occurs and all loose earth and contaminated concrete shall be removed from the hole before concreting is resumed.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 10 of 21

6.13. Disposal of Excavated Materials:

- 6.13.1. Excavated earth shall be disposed of at a location on the substation site or transmission right-of-way as directed by the Owner.

7. Backfill

- 7.1. Backfill shall not be placed until concrete has sufficiently cured. Backfill shall be placed simultaneously on all sides of foundations.
- 7.2. Spread footing (pad and pedestal) foundations shall be backfilled as soon as practicable, the material being placed in layers not exceeding six inches, and compacted until no further compaction is required, using conventional compaction equipment. Care shall be taken to exclude any lumps from the backfill. Each layer shall be placed evenly on all sides so as not to damage or displace the foundation.
- 7.3. Backfill material, unless otherwise specified, shall be clay, sand, gravel or other suitable excavated material which is substantially free from any organic material. When the excavated material is not acceptable, the Contractor shall obtain suitable backfill from a location approved by the Owner.
- 7.4. Large stones, muck, frozen material, organic or other undesirable material shall not be permitted or used for backfill.
- 7.5. Compact cohesive backfill to a density of at least ninety-five percent of maximum density as determined by ASTM D698. Compact non-cohesive backfill to relative density of at least ninety-five percent as determined by ASTM D2049.
- 7.5.1. Use appropriate compaction methods as necessary to obtain densities specified herein. Generally, compact cohesive material by rolling and/or mechanically tamping, and noncohesive material by mechanically vibrating.
- 7.6. Backfills that settle or erode before the final acceptance of the Work and structures and other facilities damaged by such settlement or erosion, shall be repaired.
- 7.6.1. The settled or eroded areas shall be refilled, compacted and graded to conform to the elevation indicated on the Drawings or to the elevation of the adjacent ground surface.
- 7.6.2. Damaged facilities shall be repaired in a manner acceptable to the Owner.


8. Cast-In-Place Concrete

8.1. General

- 8.1.1. Furnish and install all cast-in-place concrete and miscellaneous materials required, as specified herein and shown on the Drawings.

8.2. Materials

- 8.2.1. Where the use of the following materials is specified herein, such materials shall be in accordance with these requirements:
- 8.2.2. Cement: ASTM C150, Type I, II, or III and Type 1A, IIA or IIIA, as specified on the Drawings.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 11 of 21

8.2.3. Fine aggregate: Clean natural sand, ASTM C33.

8.2.4. Coarse aggregate: Crushed stone, ASTM C33.

8.2.5. Water: Clean and free from deleterious substances.

8.2.6. Admixtures:

- Air entraining agent: ASTM C260; Grace "Darex AEA", Gifford-Hill "Air-Tite", Master Builders "MB-VR", Melment AMEX 210, or approved.
- Plasticizing retarder: ASTM C494, type A or type F; Grace "WRDA-19", Gifford-Hill "PSI" or "PSI Super", Master Builders "Pozzolith 400-N", Melment or approved equal.

8.2.7. Reinforcing steel:

- Bars: ASTM A615 Grade 60.
- Welded wire fabric: ASTM A185
- Tie wire: Steel; looped ends; 16 gage.
- Bar supports: Manual of Standard Practice, by Concrete Reinforcing Steel Institute

8.2.8. Expansion joint materials:

- Filler: Preformed, ASTM D1752, Type I (sponge rubber) or closed cell plastic foam (PVC or polyethylene).
- Sealer: Polysulfide rubber, two component, ANSI A116.1 and Fed Spec TT-S-227, bearing Thiokol Chemical "Tested and Approved Sealant" seal, gray color.
- Primer: As recommended by sealant manufacturer.
- Epoxy bonding compound: Sika Chemical "Sikadur Hi-Mod" or approved equal.
- Membrane curing compound (and floor sealer): ASTM C309, Type 1; clear chlorinated rubber, minimum eighteen percent solids; Grace "Dekote", ProSoCo "Kure & Seal", Protex "Triple Seal Series CCL-18", or Con Spec "#21".

8.2.9. Form Materials:

- Plywood: Product Standard PS1, water proof, resin-bonded, exterior type Douglas fir; face adjacent to concrete Grade B or better.

8.3. Limiting Requirements

8.3.1. Concrete mix shall be controlled within the following limiting requirements.

8.3.2. Coarse aggregate sizes listed hereinafter are the nominal sizes given in Table 2 of ASTM C33. To qualify as a certain aggregate size, the gradation of the aggregate must be within the tabulated limits.

8.3.3. Total Water Content: Total water content of concrete shall not exceed 6.4 gallons of water per hundred pounds of cement in the mix, (six gallons per ninety-four pound sack of cement).

8.3.4. Slump: Unless otherwise authorized by the Owner, slump shall be as specified on the drawings.

UC / SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 12 of 21

8.3.5. Ratio of Fine to Total aggregates: The ratio of fine to total aggregates based on solid volumes (not weights) shall be:

– Coarse Aggregate Size:

	<u>Minimum Ratio</u>	<u>Maximum Ratio</u>
1/2 inch to No. 4	0.40	0.55
3/4 inch to No. 4	0.35	0.50
1 inch to No. 4	0.30	0.46
1-1/2 inch to No. 4	0.25	0.42

8.3.6. Initial Set: The initial set as determined by ASTM C403 shall be attained in not less than five hours after the water and cement are added to the aggregates.

8.3.7. When used, the quantity of retarding admixture shall be adjusted as necessary to compensate for variations in temperature and job conditions.

8.3.8. Total Air Content: The total volumetric air content of concrete after placement shall be five percent, plus or minus one percent.

8.3.9. Admixtures: The admixture content, batching method and time of introduction to the mix shall be in accordance with the manufacturer's recommendations for compliance with these Specifications.

8.3.10. Strength: The minimum acceptable compressive strength as determined by ASTM C39 shall be as specified on the drawings.

8.3.11. In the event any test cylinder indicates concrete strength less than the specified minimum, the concrete represented by the test shall be subject to further investigation at the Owner's option (see 8.7).

8.4. Storage of Materials

8.4.1. Cement shall be stored in suitable moisture-proof enclosures. Reclaimed cement or cement which has become caked or lumpy shall not be used.

8.4.2. Aggregates shall be stored so that segregation and the inclusion of foreign materials are prevented. The bottom six inches of aggregate piles that have been in contact with the ground shall not be used.


8.4.3. Reinforcing steel shall be carefully handled and shall be stored on supports which will keep the steel from contact with the ground.

8.5. Batching and Mixing

8.5.1. Batching and mixing shall be performed with suitable equipment located at the construction site or by an acceptable ready-mix concrete supplier. Ready-mix concrete shall conform to ASTM C94.

8.5.2. Batching:

- The measurement of aggregates and cement shall be by weight. Aggregate weights shall be adjusted for actual moisture content.
- Each admixture shall be dispensed by a mechanical device that will insure accurate and automatic measurement.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 13 of 21

- The minimum amount of water required to produce the desired slump shall be batched automatically.

8.5.3. Mixing:

- Concrete shall be mixed in accordance with ASTM C94 until all ingredients are uniformly distributed throughout the batch.

8.6. Placement

8.6.1. The handling, depositing and compacting of concrete shall conform to these Specifications subject to adjustment by the Owner for weather or placement conditions.

8.6.2. Unless otherwise noted, monolithic placement of foundations is required.

8.6.3. Spread footings may be poured separately from the pedestals provided that the pedestal is poured within three (3) hours after the spread footing. If elapsed time exceeds three (3) hours, an approved concrete bonding adhesive shall be applied to the spread footing surface in contact with the pedestal. Elapsed time between pouring the spread footing and pedestal shall not exceed six (6) hours.

8.6.4. Concrete for augured holes shall be placed the same day the holes are augured.

8.6.5. Concrete shall not be pumped through aluminum pipe or aluminum alloy pipe.

8.6.6. Where concrete is poured on very dry soil or porous material, reinforced building paper shall be laid over the surfaces against which concrete is deposited.

8.6.7. Rock surfaces shall be sufficiently roughened to assure satisfactory bond with concrete.


8.6.8. The use of expansion joints, whenever prescribed on the Drawings, shall have a good bond and be watertight.

8.6.9. Bonding to Hardened Concrete:

- In the event it becomes necessary to place fresh concrete in contact with hardened concrete, the surface of hardened concrete upon which fresh concrete is to be placed shall be rough, clean, and damp. Surface mortar shall be removed to expose the aggregate. The hardened surface shall be cleaned of all foreign substances (including curing compound), washed with clean water, and kept saturated during the twenty-four hour period preceding placement of fresh concrete.
- Course aggregate shall be omitted from the first batch or batches of concrete deposited on hardened concrete in wall or column forms having depths of six feet or more. The mortar puddle shall cover the hardened concrete to a depth of not less than two inches at every point.

8.6.10. Conveyance and Distribution:

- All concrete mixing and placing equipment and methods shall be subject to approval by the Owner.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 14 of 21

- The method and equipment used for transporting concrete shall be such that concrete having the required composition and consistency will be delivered to its final position without objectionable segregation or loss of slump. Concrete shall be deposited in its final position without moving it laterally in the forms for a distance in excess of five feet.
- It is specifically a provision of this Specification that mixer trucks must have an accurate water measuring device in good order at all times and positive cutoff water valves that will not permit additional water to leak into the mixing drum. Mixer trucks not properly equipped and maintained shall not be used on this Work. Special care shall be taken to keep drum fins clean so that proper mixing of aggregates will be accomplished.

8.6.11. Depositing Concrete:

- The starting time of mixing the batch in the presence of moisture and of the pouring of each batch shall be recorded in a manner satisfactory to the Owner, and the elapsed time of mixing shall not exceed one and one-half hours. Concrete shall be placed only in the presence of a duly authorized representative of the Owner. Concrete placement will not be permitted when, in the opinion of the Owner, weather conditions or other pertinent factors prevent proper placement and consolidation.
- Concrete shall be placed in such a manner to prevent displacement of the reinforcing or from "striking" the unprotected sides of the excavation, so as to loosen the soil and contaminate the pour. When concrete is discharged into a foundation, the vertical drop from the end of the chute shall not exceed five (5) feet.
- Concrete shall be deposited in approximately horizontal layers of proper depth for effective compaction; however, the depth of a layer shall not exceed twenty inches. The forms shall be filled at a rate of vertical rise so that each layer of concrete shall be plastic when covered with the following layer. Horizontal and vertical construction joints shall be provided as necessary and as accepted by the Company to comply with these requirements.
- Plastic concrete is defined as concrete which can be revibrated at least to the extent that an immersion type vibrator spud will penetrate the concrete at least one inch by vibration action and its own weight.
- Any concrete retained in truck mixers so long as to require additional water to permit satisfactory placing shall be wasted. Retempering of concrete will not be permitted. Adding dry cement to reduce the slump will be allowed only when approved by the Owner.
- Wasted concrete, concrete spillage and concrete ordered removed from the work shall be removed from the site or otherwise disposed of at the direction of the Owner. Wash water used for cleaning concrete mixing and handling facilities, or any other waste containing cementitious materials shall be dumped in a suitable location away from the site.
- Concrete shall be deposited in approximately horizontal layers of proper depth for effective compaction which shall not exceed twenty inches. Each layer of concrete shall be plastic when covered with the following layer and the forms shall be filled at a rate of vertical rise of not less than two feet per hour.

UC / SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 15 of 21

8.6.12. Underwater Concrete:

- Under water concrete shall be placed through tremies having hoppers at the upper end. The lower end of the tremie shall be kept below the surface of the deposited concrete. Stirring of the deposited concrete shall be avoided. When necessary to move, the tremie shall be lifted free of the concrete and lowered vertically at the new location.
- Concrete to be deposited by tremie shall have the cement factor increased by one sack per cubic yard and the slump increased to a maximum of nine inches.
- Slump of concrete may be increased by use of a plasticizing admixture (8.2.6.), provided that the concrete is delivered to the job site at the specified slump (8.3.4.) and the plasticizing agent is used in accordance with manufacturer's recommendations.
- The water shall be quiescent when concrete is deposited therein.

8.6.13. Compaction:

- During and immediately after depositing, all concrete shall be thoroughly compacted, worked around reinforcements and embedments, and worked into the corners of the forms. All concrete shall be compacted by means of mechanical vibrating equipment, except duct bank concrete shall be rodded or spaded and concrete slabs six inches or less in thickness may either be vibrated or tamped (concrete shall be worked around reinforcements and embedments, and worked into all corners of the forms).

8.6.14. Hot Weather Concreting:

- Except as herein specified, hot weather concreting shall comply with ACI 305. At air temperatures of 90° F or above, special procedures shall be adopted to keep the concrete as cool as possible during placement and curing. The temperature of the concrete when it is placed shall not exceed 90° F.
- Whenever the air temperature exceeds 95° F, membrane cured slabs shall be kept wet to promote cooling of the concrete during the curing period.
- Cold Weather Concreting:
- Except as herein specified, cold weather concreting shall comply with ACI 306. The temperature of concrete at the time of mixing shall be not less than that indicated in the following table for corresponding outdoor temperature (in shade) existing at the time of placement:

<u>Outdoor Temperature</u>	<u>Concrete Temperature</u>
Below 30°F	70°F
Between 30°F & 45°F	60°F
Above 45°F	45°F

- When deposited, the temperature of heated concrete shall not be over 80°F.
- When freezing temperatures may be expected during the curing periods, suitable means shall be provided for maintaining the concrete at temperatures of not less than 50°F for five days or 70°F for three days after the concrete is placed. Concrete and adjacent form surfaces shall be kept moist at all times. Sudden cooling of concrete shall not be permitted.
- The use of calcium chloride will not be permitted.

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 16 of 21

8.7. Concrete Tests

8.7.1. Field control tests consisting of slump tests, air content tests, and the preparation of concrete test specimens shall be made by an approved testing laboratory. The Contractor shall be responsible for coordinating concrete placement with the owners on-site representative. The owners on-site representative shall then contact the testing laboratory and coordinate the concrete testing with them.

8.7.2. Slump:

- A slump test shall be made daily from the first and every other truckload of concrete used. Slump shall be determined in accordance with ASTM C143.

8.7.3. Air Content:

- An air content test shall be made daily from the first and every other truckload of concrete used. Air content shall be determined in accordance with ASTM C231.

8.7.4. Compression Tests:

- Concrete test cylinders shall be made, cured, stored and delivered to the laboratory in accordance with ASTM C31. The cylinders will be tested in accordance with ASTM C39.
- Each set of compression test cylinders shall be marked or tagged with the date and time of day the cylinders were made, all locations in the work where the concrete was placed, the delivery truck or batch number, the air content and the slump.
- A set of four compression test cylinders shall be made daily from the first and every other truckload of concrete or as determined by owners on-site representative. One cylinder shall be tested at an age of seven days, two at an age of twenty-eight days, and the third (or spare) at an age of fifty-six days if the twenty-eight day cylinders have a low breaks.
- If concrete tests indicate that concrete strength is below that specified, the Owner may require that the testing lab take additional concrete tests on the in place concrete. If these additional tests verify that concrete strength is not equal to that specified, the Owner may require that the Contractor replace the low strength concrete at the Contractor's expense. Cost of any additional testing will be borne by the Contractor.

8.7.5. Test Reports:

- The Contractor will be furnished one copy of all test reports made by the laboratory.

8.8. Reinforcement

8.8.1. Reinforcements shall be accurately formed and shall be free from loose rust, scale, and contaminants which reduce bond. Unless otherwise indicated on the Drawings or specified herein, the details of fabrication shall conform to ACI 315 and 318.

8.8.2. Welding:

- Unless otherwise authorized by the Owner, welding of reinforcement is not acceptable.

UC / SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 17 of 21

8.8.3. Placement:

- Reinforcements shall be accurately positioned on supports or other reinforcements and secured in place prior to placing concrete.

8.8.4. Splices:

- Splices shall be tension-lapped splices except as otherwise authorized by the Owner.

8.9. Forms

8.9.1. Forms shall be designed of plywood or metal, except as otherwise authorized by the Owner, to produce hardened concrete having the shape, lines and dimensions indicated on the Drawings. Forms shall be constructed and maintained in proper position and accurate alignment.

8.9.2. Forms shall be sufficiently strong to carry the dead weight of the concrete without undue deflection or bulging, and sufficiently tight to prevent leakage. Wooden forms for exposed surfaces shall be dressed in uniform thickness and shall be free from loose knots or other defects. Joints in forms shall be horizontal or vertical. Reused wood shall have nails withdrawn and surfaces to be in contact with concrete thoroughly cleaned before being used again.

8.9.3. All surfaces of forms that have become encrusted with dried mortar or grout from concrete previously placed or with mud or other foreign materials shall be cleaned before the surrounding or adjacent concrete is placed. Immediately before placing concrete, all surfaces of forms shall be thoroughly wetted.

8.9.4. Forms shall conform to ACI 347 and the following additional requirements.

8.9.5. Edges and Corners:

- Chamfer strips shall be placed in forms to bevel all salient edges and corners except edges which are below grade. Bevel dimensions shall be three-fourth inch by three-fourth inch.
- Unless specified to be beveled, exposed edges of floated or troweled surfaces shall be edged with a tool having a one-fourth inch corner radius.

8.9.6. Form Removal:

- Forms shall not be removed or disturbed until the concrete has attained sufficient strength to safely support all dead and live loads. Care shall be taken in form removal to avoid surface gouging, corner or edge breakage, or other damage to the concrete.
- Under normal conditions, after placing concrete, the minimum waiting period before the forms may be stripped shall be governed by the following schedule, but the use of this schedule shall not relieve the Contractor of responsibility for the safety of the structure.

	Average Air Temperature	
	Above 50°F	40-50°F
Side forms of footings and piers.	3 days	5 days

- When temperatures below 40°F occur, the forms shall remain in place for an additional time equal to the time the structure has been exposed to the lower temperature.

UC / SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 18 of 21

- Test results of field control cylinders may be used for determining when forms may be removed. Forms may be removed after tests on such cylinders show that at least seventy-five percent of the required twenty-eight day strength has been attained.

8.10. Embedments


- 8.10.1. Materials that are to be embedded in the concrete shall be accurately positioned and securely anchored.
- 8.10.2. Embedments shall not be welded to reinforcement.
- 8.10.3. Embedments shall be clean when they are installed.
- 8.10.4. After concrete placement, surfaces not in contact with concrete shall be cleaned of all concrete spatter and other foreign substances.

8.11. Finishing Formed Surfaces

- 8.11.1. All fins and other surface projections shall be removed from all exposed-formed concrete surfaces. Form marks, minor roughness or slight imperfections on exposed concrete surfaces shall be corrected by use of a carborundum stone. Exterior surfaces which will be exposed above grade shall be cleaned and rubbed. Rubbing shall produce a smooth, uniform surface free of marks, voids, surface glaze and discolorations.
- 8.11.2. Projecting ends of all form ties shall be removed and the resulting recesses shall be cleaned, wetted, and filled with patching mortar.

8.12. Finishing Unformed Surfaces

- 8.12.1. Unformed surfaces designated as floated surfaces and all surfaces not otherwise designated shall be finished by screeding and floating. Surfaces designated as troweled surfaces shall be finished by screeding, floating, and troweling.
- 8.12.2. Floating:
 - Screeded surfaces shall be given an initial float finish as soon as the concrete has stiffened sufficiently for proper working. Initial floating shall produce a surface of uniform texture and appearance with no unnecessary working of the surface with the float.
 - Initial floating shall be followed by a second floating at the time of initial set. The second floating shall produce a smooth, uniform, and workmanlike float finish of uniform texture and color. The completed finish for all unformed surfaces designated as float finished and surfaces not otherwise designated shall be a float finish as produced by the second floating.
 - Floating shall be performed with hand floats or suitable mechanical compactor floats.
 - Unless otherwise noted, a float finish shall be provided for the following surfaces:
 - Walks and steps
 - Aprons
 - Foundations where leveling nuts are used
 - Driveways

	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 19 of 21

8.12.3. Troweling:

- Troweling shall be performed after the second floating when the surface has hardened sufficiently to prevent an excess of cement being drawn to the surface. Troweling shall produce a dense, smooth, uniform surface free from blemishes and trowel marks.
- Unless otherwise noted, a trowel finish shall be provided for the following:
 - Foundations where leveling nuts are not to be used
 - Equipment slabs
 - Floor slabs
 - Curbs

8.13. Curing

8.13.1. All exposed concrete shall be properly cured for seven (7) days by moist curing using wetted burlap, with Kraft paper or polyethylene sheets to prevent evaporation or by spray application of a liquid membrane-forming compound conforming to ASTM C309, Type 1. Where wetted burlap is used, the burlap shall be free of any substance that is harmful to concrete or causes discoloration. New burlap shall be thoroughly rinsed in water to remove soluble substances and make the burlap more absorbent. Burlap shall be kept continuously wet during the seven (7) day curing period. Where a membrane-forming compound is used, the membrane shall be applied according to the manufacturer's recommendations. Surface defects shall be filled prior to application of membrane curing compound. The application shall be made with spraying equipment capable of applying a smooth, even-textured coat, and compressed air lines shall be trapped to prevent moisture or oil from getting into the compound. All concrete surfaces on which membrane compound has been applied shall be adequately protected for the duration of the curing period from any cause which will disrupt the continuity of the curing membrane. No membrane-curing compound shall be used on surfaces requiring subsequent bonding.

8.13.2. Moist Curing:

- Water saturation of concrete surfaces shall begin within twelve hours in dry weather and within twenty-four hours in damp weather. The rate of water application shall be regulated to provide complete surface coverage with a minimum of runoff.

8.13.3. Membrane Curing:

- Membrane curing compound shall be applied within thirty minutes after final finishing of the surface or as soon as possible without damaging the surface.

8.14. Repairing Defective Concrete

8.14.1. Defects in formed concrete surface (voids, honeycomb, etc.) shall be repaired to the satisfaction of the Owner within twenty-four hours, and defective concrete shall be replaced within forty-eight hours after adjacent forms have been removed. All concrete which is defective (porous, honeycombed, etc.) to a depth in excess of one inch shall be cut out and removed to sound concrete with square edges to avoid feathering. Cut surfaces shall be coated with epoxy bonding compound before the repair concrete is placed.

8.14.2. Mortar and concrete used in repair work shall be adequately cured and shall be finished to match adjacent surfaces.

UC SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 20 of 21

8.15. Construction Joints

- 8.15.1. Construction joints shall be located and constructed as indicated on the Drawings. If additional construction joints are desired by the Contractor, drawings indicating the locations and details of the proposed joints shall be submitted to the Owner prior to detailing and fabricating of reinforcing steel. Such additional joints shall be installed only where approved by the Owner.
- 8.15.2. All joints subjected to differential hydrostatic pressure shall be provided with a metal water stop.
- 8.15.3. Water stops shall be clean and free from coatings that would weaken the bond with concrete. Each water stop shall be continuous throughout the length of the construction joint in which it is installed. All water stops shall be maintained in proper position until the surrounding concrete has been deposited and compacted.

8.16. Expansion Joints

- 8.16.1. Expansion joints shall be located and constructed as indicated on the Drawings. Expansion joint filler shall be firmly bonded to the previously poured joint face with a suitable adhesive and the new concrete shall be poured directly against the joint filler.
- 8.16.2. Accessible edges of each expansion joint shall be sealed with a sealer applied in accordance with the manufacturer's directions.
- 8.16.3. Expansion joints so designated on the Drawings, and any additional expansion joints which will be subjected to differential hydrostatic pressure, shall be provided with a flexible water stop. Water stop embedment shall be equal on each side of the joint.
- 8.16.4. Flexible water stops shall be spliced in strict conformity with the recommendations of the water stop manufacturer. A sample ninety-degree corner splice mitered at forty-five degrees shall be prepared and submitted for the Owner's acceptance. The sample splice shall be made by the Contractor's field personnel using the procedure intended for use on the Work. The sample splice shall be submitted at least two weeks prior to the Contractor's intended first usage of flexible water stop for this project.
- 8.16.5. Rubber and plastic materials shall be stored in a cool place and shall not be exposed to direct sunlight.

8.17. Openings in Concrete

- 8.17.1. Concrete wall and floor openings for piping and other fixtures which will be installed after the walls and floors are built shall be of sufficient size that adequate space is available for the proper compaction of concrete which will be placed around the appurtenances. Water stops shall be provided around wall openings below grade and floor openings which are exposed to weather or submergence.

8.18. Tolerances

- 8.18.1. Concrete foundations shall meet the following tolerance requirements in addition to those specified herein.
- 8.18.2. Concrete form dimensions and placement shall be within one-half inch of the plan dimensions and locations indicated on the Drawings. The top of the forms shall be accurately set to the elevation required \pm one-fourth (1/4) inch to produce finished surfaces within the specified tolerances.

UC / SYNERGETIC	CONSTRUCTION SPECIFICATION
City of Danville, Virginia Brantly 69kV-12kV XFMR Replacement	REV.: B, pg. 21 of 21

- 8.18.3. Float finish surfaces shall be finished to provide a flat profile within one-fourth inch deviation as measured from a ten-foot straightedge. Trowel finished surfaces shall be finished to form a flat plane in which the profile shall not deviate more than one-eighth inch when measured from a ten foot straightedge.
- 8.18.4. Anchor bolts and all other materials that are to be embedded in the concrete shall be accurately positioned and securely anchored. The center of each anchor bolt group or cluster shall be within one-eighth inch of the location indicated on the Drawings. The center-to-center dimensions between the anchor bolts in a group or cluster shall be within one-sixteenth inch of the dimensions indicated on the Drawings.

9. Drawings Included in Construction Package

PHYSICAL DRAWINGS		
DWG. No.	Rev.	Title
CS01	0	Substation Cover Sheet - Drawing List
PSL01	0	Power Single Line
SP01	0	Site Plan
GA01	0	General Arrangement
GA02	0	General Arrangement
EL02	0	Elevation B
EL07	0	Elevation BB
EL08	0	Elevation CC
EL09	0	Elevation AA & C
FP01	0	Foundation Plan
FD01	0	Foundation Detail
FD03	0	Foundation Detail
FD05	0	Foundation Detail
OC01	0	Oil Containment Details
CP01	0	Conduit Plan
CD01	0	Conduit Details
GP01	0	Grounding Plan
GD02	0	Grounding Details
BM02	0	Bill Of Materials
SF04	0	Steel Structure Details
SF06	0	Steel Structure Details

REFERENCE DRAWINGS		
DWG. No.	Rev.	Title
GD01	AB	Grounding Details
FE01	AB	Fence Details
SP01 - DEMO	Demo	Site Plan - Demo
GA01 - DEMO	Demo	General Arrangement - Demo
GA02 - DEMO	Demo	General Arrangement - Demo
EL02 - DEMO	Demo	Elevation B&C - Demo
EL03 - DEMO	Demo	Elevation D, E, F, & k
EL06 - DEMO	Demo	Elevation J
FP01 - DEMO	Demo	Foundation Plan - Demo
FD02 - DEMO	Demo	Foundation Details - Demo
CP01 - DEMO	Demo	Conduit Plan - Demo
GP01 - DEMO	Demo	Grounding Plan - Demo
GD01 - DEMO	Demo	Grounding Details - Demo

RELAY AND CONTROL DRAWINGS		
DWG. No.	Rev.	Title
SL01	1	69kV One-Line Diagram
AC01	1	Line & Bus Relaying AC Schematic
AD06	1	69-12.47kV XFMR #2 69kV OCB "F", AC & DC Schematic Diagram
DC06	1	69-12.47kV XFMR #2 OC & Diff. DC Relay Schematic
DC07	1	69kV Bus Diff. & Reverse Power DC Relay Schematic
DC08	1	SCADA Alarm
DW06	1	XFMR #2, 69kV VCB "F" Interconnection Wiring Diagram
DW08	1	XFMR #2 Interconnection Wiring Diagram
SS01	1	AC & DC Supply Interconnection Diagram
WD02	1	Relay Control Panel #2 Wiring Diagram
CC01	1	Conduit & Cable Schedule

City of Danville

IFB 14/15-070 Bid Proposal

"Brantly Substation 69/12 KV Transformer Replacement"

The undersigned, as Bidder, hereby declares that he or he and his associates are the only person or persons interested in the proposal as principal or principals; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined specifications for the work and contractual documents relative thereto, and has read all special provisions furnished prior to the bid opening; that he has satisfied himself relative to the work to be performed, and materials and equipment to be furnished.

The Bidder proposes and agrees, if this proposal is accepted, to contract with the City of Danville, Virginia in the form of contract specified, to furnish all necessary materials, equipment, machines, tools apparatus, means of transportation, and labor necessary to perform in full and complete the requirements of the specifications and contract documents, to the full and entire satisfaction of the City of Danville, Virginia with definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents, for the lump sum price of = \$ _____

My signature certifies that the accompanying bid is not the result of or affected by any act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud punishable under Title 18.2, Chapter 12, Article 1.1 of the Code of Virginia, 1950, as amended. Furthermore, I understand that fraudulent and collusive bidding is a crime under the Virginia Governmental Frauds Act, the Virginia Government Bid Rigging Act, and Virginia Antitrust Act, and Federal Law and can result in fines, prison sentences, and civil damage awards. I hereby certify that I am authorized to sign this bid for the BIDDER.

The Bidder further agrees that:

1. The City, in protecting its best interest, reserves the right to reject any or all bids or waive any defects in favor of the City. Any changes, erasures, deletions in the unit or lump sum prices above, modifications in the bid form, or alternate proposals not specified in the bid proposal shall make the proposal irregular and subject to rejection.

2. All quantities listed above are estimates only and the City reserves the right to raise, lower, or eliminate any quantity or item and in any case the unit or lump sum prices shall be used in determining partial or final payment.

3. If awarded the contract, to execute and deliver to the City within ten (10) consecutive calendar days after their receipt of the contract documents, a satisfactory Performance Bond and Labor & Material Bond, as required, in the amount of one hundred percent (100%) of the contract amount along with the signed agreement.

4. In case of failure on their part to execute the said agreement within ten (10) consecutive calendar days after receipt of the contract documents, the monies payable by the Security accompanying this bid shall be paid to the City of Danville, Virginia, as liquidated damages for such failure; otherwise, the Security accompanying this bid shall be returned to the Bidder.

5. The work under this contract shall commence not later than five (5) consecutive calendar days after the date of a written Notice To Proceed is given by the City to the Contractor and shall be completed in sixty (60) calendar days.

6. The amount of Liquidated Damage, as stipulated in the specifications, shall be \$250.00 dollars (\$250.00) for each day, including Saturdays, Sundays, and Holidays, after the established date of completion.

7. This bid is subject to acceptance within a period of ninety (90) days from the date of this bid.

Enclosed herewith is the following Security, offered as evidence that the undersigned will enter into agreement for the execution and completion of the work in accordance with the drawings and specifications.

Bidder's Bond or Certified Check in the amount of \$ _____

If Bond, Name of Surety: _____

If Check, Name of Bank: _____

If awarded this contract, since our bid is \$200,000 or more, I/We elect to utilize the escrow account procedure in the Standard Requirements & Instructions for Bidding.

(Write Yes or No)

The undersigned Bidder acknowledges receipt of the following Addenda, which have been considered in the preparation of this Bid:

No. _____ Dated _____

No. _____ Dated _____

Company Name _____ Date _____

Address _____

Signature _____ Zip Code _____

Signature (Printed) _____ Affix Company Seal
(if applicable)

Title _____

Phone _____ Fax _____

Commonwealth of VA Contractor License # _____

VA SCC Identification# _____

City of Danville Business License (Can be obtained after bid award) # _____